

**Before the  
FEDERAL COMMUNICATIONS COMMISSION  
Washington, D.C. 20554**

**RECEIVED**  
DEC 4 1996

In the Matter of:

Amendment of the Commission's Rules to  
Establish Part 27, the Wireless  
Communications Service ("WCS")

GN Docket No. 96-228

**DOCKET FILE COPY ORIGINAL**

**RECEIVED**

**DEC - 4 1996**

**Comments of Lucent Technologies Inc.  
in Response to  
Notice of Proposed Rulemaking**

**FEDERAL COMMUNICATIONS COMMISSION  
OFFICE OF SECRETARY**

Lucent Technologies Inc. ("Lucent") submits these comments in response to the Commission's Notice of Proposed Rulemaking to Establish Part 27, the Wireless Communications Service ("WCS"), in GN Docket No. 96-228, released November 12, 1996 (hereinafter the "NPRM").

**I. INTRODUCTION AND SUMMARY**

Lucent is a leading global manufacturer of telecommunications systems, equipment, software and related services with the predominant share of its revenues coming from sales to telecommunications infrastructure providers in the United States and abroad. Approximately 82% of Lucent's 125,000 employees are located in the United States, although the company has offices or distributors in more than 90 countries and territories around the world. Lucent designs, builds and delivers a wide range of public and private networks, communications systems and software, consumer and business telephone systems and microelectronics components. Bell Laboratories, the research and development arm for the company, is widely regarded as one of the world's foremost technology research and development organizations. Lucent has been intensely involved

No. of Copies rec'd  
List ABCDE

024

in the development and implementation of wireless communications for many years, was the inventor of cellular telephony at Bell Laboratories, and is today a leading provider of systems to many Commercial Mobile Radio Service ("CMRS") licensees in both PCS and Cellular bands, using ANSI-TDMA, ETSI-GSM and CDMA technologies.

As a leading supplier of wireless equipment and technology, Lucent's interests are consistent with the stated objectives of this proceeding -- permitting and encouraging entrepreneurial efforts to develop new technologies and services, while helping to ensure the highest and best use of the 2.3 GHz band.<sup>1</sup> This objective can be best advanced by the Commission's allocation of spectrum in a manner that will encourage the rapid deployment of technology, equipment and services for this band. Therefore, Lucent respectfully recommends that the Commission prescribe specific rules as to the services which may be offered on such spectrum. Lucent believes that the proposed "allocation by auction" approach without delineation of specific permissible services will increase uncertainty and risk and thereby delay the development of technology for this band by providers like Lucent. In order for the marketplace to realize the benefits of innovative technologies, the Commission should provide for specific innovative services such as wireless broadband data and wireless local loop technologies that are not today adequately served in the marketplace and that would broaden the benefits of wireless technology beyond voice applications.

## **II. THE COMMISSION SHOULD FOCUS THE PERMITTED USES OF THE SPECTRUM TO ENCOURAGE RAPID DEPLOYMENT OF TECHNOLOGY.**

Although Lucent supports the Commission's proposal to institute market-oriented spectrum management policies, the Commission must adhere to its obligations under

---

<sup>1</sup> NPRM paragraph 23.

Section 309(j) of the Communications Act and Section 3001 of the Appropriations Act.<sup>2</sup> The Commission's proposal to allocate the 2.3 GHz band by auction endangers the fulfillment of its spectrum management responsibilities and undermines the goals of its market-oriented policies. Lucent urges the Commission to specify a particular use for the 2.3 GHz band.

Section 309(j) specifically directs the Commission to: (1) promote the development and rapid deployment of new technologies, products, and services; (2) promote economic opportunity and competition and to ensure that new and innovative technologies are readily accessible; (3) recover a portion of the value of the spectrum made available for commercial use; and (4) encourage the efficient and intensive use of the spectrum.<sup>3</sup> The failure to allocate a particular service for initial use in the 2.3 GHz band will undermine the fulfillment of these obligations.

The Commission must provide manufacturers with some guidance for product development if delays are to be avoided. Failure to allocate the 2.3 GHz band for a specific use will impair the development and rapid deployment of new products and will hinder the ready accessibility of new technologies, as required by Section 309(j). Moreover, failure to provide manufacturers with product development guidance through proper use allocation will preclude the efficient and intensive use of the spectrum because licensees will have spectrum but no means of utilizing it.<sup>4</sup> Instead, the 2.3 GHz band likely will remain unused or underutilized as the market struggles to define its appropriate use. Finally, the Commission must define the relevant market created by WCS auctions if it expects to receive market value for the spectrum. The uncertainty created by lack of information surrounding the expected use of the 2.3 GHz band likely will diminish the

---

<sup>2</sup> Omnibus Consolidated Appropriations Act, P.L. 104-208, 110 Stat. 3009 (1996) (Section 3001).

<sup>3</sup> 47 U.S.C. § 309(j)(3).

<sup>4</sup> Similarly, Section 3001 also requires the Commission to promote the efficient use of the spectrum.

value of the WCS licensees and, not coincidentally, will undervalue the spectrum to both licensees and the public. In sum, the objectives contained in Section 309(j) militate strongly against the Commission's "allocation by auction" proposal and require specific spectrum use allocation.

While Lucent generally supports the concept of flexible regulation, the Commission's proposal to allow essentially any and all services to operate in this band -- or in other words, allocate the spectrum solely by auction -- will cause confusion and uncertainty in the marketplace that will only serve to deter the development of new equipment and technology for this band. In the case of PCS, vendors like Lucent knew in advance which services would be offered -- regardless of the identity of the winning licensee -- and could begin long lead time work far in advance of the auction. The advance notice resulted in vigorous competition among technology providers seeking to gain a foothold in the new spectrum. In the case of undefined services, manufacturers like Lucent will be less willing to undertake the substantial capital investment and risks necessary to develop and introduce products for the new spectrum until after the award of licenses and determination of the planned uses of that spectrum.<sup>5</sup> Similarly, the need for manufacturers to address numerous bands for similar service will slow the rate of innovation.<sup>6</sup>

Indeed, past attempts by the Commission to rely on the market to specify the initial use of a spectrum band have failed. For example, in 1995 the Commission allocated

---

<sup>5</sup> See En Banc Hearing on Spectrum Policy, Testimony of Motorola, Inc., at 8 (filed Feb. 20, 1996) ("Certainty and stability in FCC allocation policies are also critical to allowing manufacturers to commit resources to research and development. Because the investment community responds to market certainty but shuns chaos, predictable deadlines and stable technologically based allocation decisions are needed if U.S. research and development activities are to be promoted.")

<sup>6</sup> See Testimony of Craig McCaw, En Banc hearing on Spectrum Policy 56-57 (March 5, 1996) "But this is a multi-dimensional product, and if we ask the manufacturers to build products which go through many multiband machinations, they will not achieve the manufacturing economies and be able to deliver these new and innovative services."

spectrum in the 4 GHz band (4660-4685 MHz) to the "General Wireless Communications Service" ("GWCS"). Eligible uses of GWCS spectrum include any fixed or mobile services that are not broadcast, radiolocation, or satellite services.<sup>7</sup> The Commission hoped that, because this allocation was not tied to any specific use, "GWCS will encourage research and investment to invent, develop, and market new technologies, and spur their deployment to serve consumers."<sup>8</sup> Unfortunately, the Commission's expectations for this allocation have not been realized, as little or no equipment for this spectrum has been developed to date, more than one and a half years after the initial allocation. Lacking adequate service definition, the development of GWCS services has been neither rapid nor efficient; the GWCS allocation has failed to stimulate the accessibility of new and innovative technologies; and the stark absence of manufacturing activity in the band holds little promise for efficient and intensive use of the spectrum. The Commission should avoid the same result here.

Thus, in order for the marketplace to realize the benefits of innovative technologies, the Commission should provide for specific innovative services that are not today available elsewhere in the marketplace and that would broaden the benefits of wireless technology beyond conventional voice technology. An ideal example would be wireless broadband data services and wireless local loop, new and innovative services for which demand is likely to rise rapidly<sup>9</sup>.

---

<sup>7</sup> See Allocation of Spectrum Below 5 GHz Transferred from Federal Government Use, ET Docket No. 94-32, First Report and Order and Second Notice of Proposed Rulemaking, 10 FCC Rcd 4769, 4792-93 (1995). See also Allocation of Spectrum Below 5 GHz Transferred from Federal Government Use, Second Report and Order, 11 FCC Rcd 624, 630 (1995) ("Second Report and Order").

<sup>8</sup> Second Report and Order at 631.

<sup>9</sup> See, e.g., En Banc Hearing on Spectrum Policy, (March 5, 1996) in which demand for such services was recognized in the testimony of Richard Parlow of NTIA (tr. 22) and David Twyver of Nortel ("I think the largest new need for spectrum in the U.S. will be for wireless local loop and wireless access applications.") (tr. 25)

### **III. THERE IS NO PRESSING NEED FOR MORE CMRS SPECTRUM TODAY.**

In the past, unmet demand in the marketplace has been the major impetus for the initiation of spectrum allocation and assignment proceedings. The WCS auction, however, is a response not to market demand, but Congressional mandate based primarily on budget considerations. Thus, the Commission lacks the usual market signals to help guide its action. Here, there is no evidence of demand for further CMRS spectrum; indeed, as demonstrated below, a further allocation of general CMRS spectrum may be harmful.

The Commission itself recognizes that in recent years it has provided an enormous amount of additional capacity for general CMRS use, through the various PCS license auctions. "[W]ith the advent of PCS and other new CMRS services, we have significantly increased the amount of spectrum available for mobile services over what was available previously."<sup>10</sup> PCS providers are racing to use their expensive spectrum. The enormous requisite capital investment in both spectrum and facilities for PCS has caused many PCS providers to approach quickly the limits of available financing for their immediate build-out. Moreover, the expected highly competitive market for CMRS services which will greet the new entrants places the additional pressure of rapid deployment on PCS licensees. Few doubt that eventually the market will absorb the available capacity, but the saturation of investment markets with financing requests by PCS licensees is evidence that the financial participants essential to the working of the marketplace will need some time to absorb the existing capacity. Other services, including "paging, narrowband and unlicensed PCS, 220 MHz service, air-ground service, maritime service, satellite-based mobile services General Mobile Radio Service, General Wireless Communications Service,

---

<sup>10</sup> Amendment to Commission's Rules To Permit Flexible Service Offerings in the Commercial Mobile Radio Services, WT Docket No. 96-6, First Report And Order And Further Notice Of Proposed Rule Making, ¶ 21 (Released August 1, 1996).

interconnected private radio systems, CB radio and other 'low-end' services, government radio systems, resellers of the foregoing services, and some wired local exchange service" have at least some cross-elasticity and substitutability with CMRS and further assure the competitive nature of the market.<sup>11</sup> Thus, there is no immediate need for additional CMRS spectrum.<sup>12</sup>

Adding a large block of entirely unfettered capacity for WCS above 2.3 GHz, may induce uncertain entrants to offer known services such as CMRS. For the reasons explained above, new WCS providers will find it difficult to secure financing for large spectrum expenditures for yet another CMRS offering, as the new providers will face greater competition and less market certainty than current PCS licensees. Moreover, permitting the 2.3 GHz band to be used for CMRS would aggravate the already significant financial burden which threatens rapid PCS build out by increasing the financial risk of PCS licensees, with the negative consequence of retarding the deployment of PCS service. Finally, the rapid release of new spectrum for essentially interchangeable services will reduce the willingness of the financial community to support large expenditures in the anticipated auction.

#### **IV. NEW WIRELESS SERVICES, SUCH AS BROADBAND DATA AND LOOP TECHNOLOGIES ARE THE BEST USE FOR THE NEW SPECTRUM.**

The Commission could accomplish its objective of encouraging innovative services by allocating the 2.3 GHz band for entirely new services which do not today exist or have

---

<sup>11</sup> Amendment of Parts 20 and 24 of the Commission's Rules -- Broadband PCS Competitive Bidding and the Commercial Radio Mobile Service Spectrum Cap, Report And Order, GN Docket No. 90-314, 11 FCC Rcd 7824 at ¶ 100. (1996)

<sup>12</sup> Technical issues also exist in providing CMRS type services in the WCS frequencies. While there are no anticipated insuperable barriers to CMRS type service in the WCS spectrum, considerable engineering, particularly for RF development and CPE, will be necessary before the infrastructure underlying service will be available. Of special concern is the ability to manufacture practical and reasonably priced handsets which can interchangeably address WCS and existing CMRS spectrum.

adequate spectrum. Lucent believes that focusing the 2.3 GHz spectrum on wireless broadband data and loop applications would stimulate deployment of innovative technologies and services for which demand will develop rapidly. Broadband wireless Internet access, interactive wireless services and wireless local loop systems are the types of technologies and applications that will promote innovation while helping to ensure the highest and best use of this spectrum.<sup>13</sup>

**V. REGARDLESS OF THE SERVICES PERMITTED, THE COMMISSION SHOULD ADOPT NECESSARY MINIMUM TECHNICAL STANDARDS**

Whether the Commission fails to delineate services for the 2.3 GHz band, as proposed in the NPRM, or adopts a wireless broadband or loop service, Lucent believes the 10 MHz allocation proposed in the NPRM is appropriate. Lucent believes that some level of asymmetry in channel usage may evolve over time, and that allowance should be made for such eventuality. The out-of-band emissions guidelines applied to the PCS band should be used initially in the 2.3 GHz band, subject to revision once ANSI 2.3 GHz band-specific technical standards are developed.

Finally, Lucent believes that the Commission should adopt minimal but necessary technical rules to prevent interference, particularly if multiple types of technologies and systems are allowed to share the band, but that the details of such technical rules necessarily will follow from the determination of the technologies and systems to be allowed. In addition, the Commission should look to recognized industry standards organizations to recommend appropriate guidelines that would foster sound technical coexistence within the band. Such organizations as the Telecommunications Industry Association and the National Spectrum Managers Association have long been recognized

---

<sup>13</sup> See n.9, supra.



as leaders in this area and could assist the Commission in addressing the requisite technical considerations.

Respectfully submitted,

LUCENT TECHNOLOGIES INC.

By Theodore M. Weitz (MGS)  
Theodore M. Weitz  
Stephen Rosen  
Its Attorneys

283 King George Road  
Room C2A23  
Warren, New Jersey 07059

Dated: December 4, 1996